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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/091,976	03/06/2002	Leonel Ernesto Enriquez	50135 (SE-1763-TL)	8374

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EXAMINER

JAMAL, ALEXANDER

ART UNIT	PAPER NUMBER
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2643

DATE MAILED: 06/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/091,976

Applicant(s)

ENRIQUEZ ET AL.

Examiner

Alexander Jamal

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 February 2005.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-35 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Based upon the submitted amendment (2-14-2005), the examiner notes that claims 1-6,20,21,23-26,32,33,35 have been amended.
2. Examiner notes that an amendment to the specification has been made.
3. Examiner maintains the previous set of rejections (items 4 and 5) and presents an additional set of rejections (items based on newly discovered prior art.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. **Claims 1-35** rejected under 35 U.S.C. 102(e) as being anticipated by Caine et al. (6735302).

As per **claim 1**, Caine discloses a SLIC comprising a high voltage analog section 100 (Fig. 1) and a low voltage digital section 102 to monitor, supply input signals and

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program the analog section (ABSTRACT). The low voltage digital section (codec) comprises both analog and digital signaling (analog-digital converters 700,710,720 in Fig. 8).

As per **claim 24**, claim is rejected for same reasons as claim 1 rejection. Additionally, the high voltage section comprises tip/ring amplifier unit (Fig. 4) that is able to amplify voice signals as well as ringing signals sent from the codec. The device further comprises a bias circuit to couple the selected biases (based on the mode of operation) to the amplifier unit in the high voltage section (Col 3 line 44 to Col 4 line 31).

As per **claim 2**, the low voltage unit sends control signals to the high voltage unit (Col 4 lines 25-35).

As per **claim 3**, claim rejected for the same reasons as claim 24 rejection.

As per **claim 4**, the SLIC further comprises a voice signal path (amps 800,802,806 in Fig. 9) with a voltage sense, current feed mode with amps 802 and 806 in a complementary polarity configuration to couple voice signals or ringing signals to the tip and ring (Col 12 line 44 to Col 14 line 20).

As per **claims 5,20,21,22,25,26,33,34**, the amplifiers in the high voltage section have programmable gain based upon the mode of operation designated by the control signals from the low voltage section (Col 12 line 66 to Col 13 line 51).

As per **claim 6**, claim rejected for same reasons as claim 4-5 rejections.

As per **claim 7**, the amplifiers are setup to operate at a first gain for voice transmission and a higher gain for the ringing mode (Col 12 line 44 to Col 14 line 20).

As per **claim 8,27**, Caine's SLIC comprises amplifiers in a transconductance configuration (they provide linear power feed and have voltage inputs with current outputs: (Col 10 lines 1-10). Amplifiers 802 and 806 (Fig. 9) are transconductance circuits coupled to a shared gain section comprising amps 800 and 804. The transconductance circuits comprise feedback resistors 820,818, and 848, and input resistors 842, and 824.

As per **claim 9**, in Caine's Fig. 9 first front end circuit 802 has resistor 824 coupled between the gain section 800 and input to transconductance circuit 802. The device further comprises second transconductance circuit 806 receiving and input through feedback resistor 844 from gain section 804. Front end circuit 802 is setup to receive Low voltage signals (Vdac) and transconductance circuit 806 is setup to receive low voltage ringing signals (in the case of the unbalanced ringing mode (Col 10 lines 27-39 Figs. 9,10b).

As per **claim 10**, claim rejected for same reasons as claim 9 rejection.

As per **claim 11**, claim rejected for same reasons as claim 24 rejection.

As per **claims 12-13,23,35**, Caine's SLIC has selectable battery (bias) voltages for different modes of operation (Col 4 lines 1-10).

As per **claim 14**, the low voltage section receives (via a battery monitor unit) an indicator of the battery voltage Vm (Col 10 lines 60-67).

As per **claim 15,28**, Caine's SLIC further comprises sensor 858 (Fig. 9) operative to provide summation for differential voice signals and cancellation of common mode signals.

As per **claim 16,29**, the SLIC further comprises an output of the sense amplifier (from amplifier 804, Fig. 9) VM that is used for a feedback loop for the low voltage section to synthesize an impedance for the SLIC (Col 6 lines 20-67).

As per **claim 17,30**, the SLIC further comprises tip/ring voltage detectors complementary-polarity coupled across tip/ring sense resistors 826,846 (Fig. 9).

As per **claim 18,32**, claim rejected for same reasons as claim 17 rejection. The resistors are coupled to the tip/ring amplifiers.

As per **claim 19,31**, Examiner takes official notice that it is well known in the art to provide transient (lightning) protection to controllably limit transient current for the purpose of protecting the SLIC circuitry.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 1-7,11-15,20-26,32-35** rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenbaum et al. (5323461) and further in view of Burke et al. (6453040).

As per **claim 1**, Rosenbaum discloses a SLIC comprising a high voltage section and a low voltage, programmable mixed mode analog and digital section. The system comprises applying a feed voltage (TV and RV in Fig. 1) to the loop and measuring the resulting current (sensing circuit 12) by means of a digital control circuit 15 that function to decode the operating states of the phone line (Col 7 line 62 to Col 8 line 68). The digital control circuit also functions as a monitoring circuit that calculates a nominal loop current based upon the measured loop current (which includes monitoring the resistance and voltage on the loop). The control circuit 15 applies control signal 17 to voltage generator 14 which may be a DC/DC converter circuit that supplies the SLIC supply voltage DV (Col 4 lines 3-35). However, Rosenbaum does not disclose that the control circuit 15 is part of a CODEC to supply analog input (with input being the voice signals to be transmitted on the subscriber loop) to the high voltage portion.

Burke discloses a SLIC 113 (applicants refer to this as the 'high voltage analog section') and associated digital CODEC (items 112,220,221) (applicants refer to this as the 'low voltage' section) (Fig. 3). The CODEC is used to interface a digital transmission line with the analog phone line via the SLIC using analog and digital signals (analog-digital converters 220,221). The CODEC additionally detects operating states of the phone line and functions with the SLIC to provide impedance matching and DC feed control (Col 4 lines 10-67). It would have been obvious to one of ordinary skill in the art at the time of this application that the digital control circuit of Rosenbaum could

additionally be implemented and integrated with the voice coding/decoding functionality of a CODEC for the purpose of providing the interface between the SLIC and the rest of the communications network.

As per **claim 24**, claim rejected for same reasons as claim 1.

As per **claim 2**, Rosenbaum's low voltage control circuit is programmable (control circuit 15) and the high voltage portion comprises operational control signals in switching circuit 11 (Col 7 table 2, Col 4 lines 35-65).

As per **claim 3**, Rosenbaum discloses that the low voltage section provides control signaling for ringing and signaling (ABSTRACT, Col 7 table 2).

As per **claims 4,6**, Rosenbaum discloses driver 10 (Fig. 1) comprising two complementary polarity drivers used to drive voice signals onto the loop (in the offhook state) (ABSTRACT).

As per **claims 5,7,20-23,25,26,33,34**, Rosenbaum's control circuit 15 provides programmable gain states based upon the various operating modes of the system (Col 5 table 1, Col 6 table 2).

As per **claim 11**, Rosenbaum discloses the SLIC supply bias is provided by battery voltage applied to a PWM DC-DC converter (Col 4 lines 1-10).

As per **claims 12,13,35**, Rosenbaum discloses switching circuit 11 (Fig. 1) to selectively couple the battery to the driver section the voltages may be of varying gains (both high and low).

As per **claims 14,15,32**, Rosenbaum discloses sensing circuit 12 to monitor the battery state back to control circuit 15 (Fig. 1). The sensing circuit comprises tip/ring loop detectors that are coupled to the driver circuit via the control circuit.

8. **Claims 8-10,27** rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenbaum et al. (5323461) and Burke et al. (6453040) as applied to claims 1-7,25,26, and further in view of Caine et al. (6735302).

As per **claims 8,9,27**, Rosenbaum in view of Burke discloses applicant's claims 1-7,25,26, including a sensing circuitry, voltage source, and driving circuitry, however they do not disclose the details of the circuitry as per claims 8 and 9.

Caine discloses a SLIC that comprises amplifiers in a transconductance configuration (they provide linear power feed and have voltage inputs with current outputs: (Col 10 lines 1-10). Amplifiers 802 and 806 (Fig. 9) are transconductance circuits coupled to a shared gain section comprising amps 800 and 804. The transconductance circuits comprise feedback resistors 820,818, and 848, and input resistors 842, and 824. Caine's Fig. 9 first front end circuit 802 has resistor 824 coupled between the gain section 800 and input to transconductance circuit 802. The device further comprises second transconductance circuit 806 receiving and input through feedback resistor 844 from gain section 804. Front end circuit 802 is setup to receive Low voltage signals (Vdac) and transconductance circuit 806 is setup to receive low voltage ringing signals (in the case of the unbalanced ringing mode (Col 10 lines 27-39

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Figs. 9,10b). It would have been obvious to one of ordinary skill in the art at the time of this application to implement the circuitry of Chea Jr. for the purpose of accomplishing the functions specified by the functional blocks of Rosenbaum in view of Burke with a linear amplifier.

As per **claim 10**, claim rejected for same reasons as claim 9 rejection.

9. **Claims 16-19,28-31** rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenbaum et al. (5323461) and Burke et al. (6453040) as applied to claims 1-15,24, and further in view of Chea Jr. (4315106).

As per **claims 16-19,28-31**, Rosenbaum in view of Burke discloses applicant's claims 1-15,24, including a sensing circuitry, voltage source, and driving circuitry, however they do not disclose the details of the circuitry including an auxiliary amplifier used as feedback to synthesize impedance with the amplifier using tip and ring sensing resistors (which will also limit transient currents as they are in series with the loop).

Chea Jr. discloses a more detailed SLIC circuitry comprising a sensing circuitry, voltage source, and driving circuitry. Chea's system comprises an auxiliary amplifier A1 used as feedback to synthesize impedance with the amplifier using tip and ring sensing resistors R3, R4 (which will also limit transient currents as they are in series with the loop). It would have been obvious to one of ordinary skill in the art at the time of this application to implement the well known circuitry of Chea Jr. for the purpose of

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accomplishing the functions specified by the functional blocks of Rosenbaum in view of Burke.

Response to Arguments

10. Applicant's arguments with respect to claims 1-33 have been considered but are moot in view of the new ground(s) of rejection. Additionally, examiner notes that the Caine reference does disclose a mixed analog and digital processing codec as per fig 8 in Caine.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


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